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To: THE COMMISSION

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Arizona Corporation Commission

From: Robert Marvin
Director
Safety Division

AZ CORP COMMISSION DOCKETED
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Date: October 8, 2015

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RE: IN THE MATTER OF THE APPLICATION OF THE ARIZONA DEPARTMENT OF TRANSPORTATION TO UPGRADE AN EXISTING AT-GRADE CROSSING OF THE BNSF RAILWAY AT THE GRAND AVENUE/THUNDERBIRD ROAD INTERSECTION IN THE CITY OF EL MIRAGE, MARICOPA COUNTY, ARIZONA, USDOT NO. 025-631-X.

DOCKET NO. RR-02635B-15-0198

Background

On June 17, 2015, the Arizona Department of Transportation ("ADOT") filed with the Arizona Corporation Commission ("Commission") a request for approval for the BNSF Railway ("Railway") to upgrade an existing at-grade crossing at the Grand Avenue/Thunderbird Road intersection in the City of El Mirage ("City"), Maricopa County, Arizona at USDOT No. 025-631-X.

On May 28, 2015, Staff, the Railroad, ADOT, the City, and the City's consultants participated in a diagnostic review of the proposed improvements at Grand Avenue and Thunderbird Road. All parties present were in agreement to the proposed improvements at the crossings. The following is a break down of the crossings in this application, including information about the crossings that was provided to Staff by ADOT, the City and its consultants.

Geographical Information

Since its incorporation in 1951, El Mirage has transcended its rural, agricultural beginnings to emerge as a diverse suburban community of more than 32,000 residents currently. The City's affordable housing, small town feel, and proximity to Phoenix have attracted young working families seeking their first homes, retirees looking for community cohesion and a less hurried pace, and entrepreneurs seeking expansion into new markets.

El Mirage is located in the heart of the rapidly growing West Valley, approximately 19 miles northwest of downtown Phoenix. The City is minutes away from Luke Air Force Base, the USAF's largest fighter pilot training facility in the world. U.S. Highway 60 (Grand Avenue) and a BNSF rail line border the City's northern edge, supporting economic development and easy access to Loop 101 and 303, two of the areas busiest regional highways.

Thunderbird Road/Thompson Ranch Road

The rail line in this area parallel's the US60. The existing at grade crossing consists of two thru east bound lanes, one west bound left turning lane, and a westbound thru lane. The proposed project consists of widening the roadway to the south. The new roadway would consist of two thru lanes eastbound, two dedicated left turn lanes westbound, one westbound thru lane, and a shared thru/right turn lane westbound. A new concrete crossing surface will be added, along with replacing any impacted pavement markings. A new raised median will be installed, were 2 new flashing light and gate units will be installed, one for westbound traffic and one for eastbound traffic. The existing cantilever and gate flasher unit will be left in place for westbound traffic. A new cantilever and flashing light and gate unit will be installed on the curb for eastbound traffic. Advanced preemption will also be installed at the crossing. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the State. The estimated cost of the proposed railroad crossing upgrades is \$1.3 million. The project is being funded by proposition 400, which Maricopa County voters passed in 2004 allowing a half cent sales tax for the next 20 years to be used for implementing MAG's (Maricopa Association of Governments) RTP (Regional Transportation Plan), which this project falls into. The Railroad will maintain the warning devices and the crossing surface.

Average Daily Traffic ("ADT") was provided by the ADOT and shows as of December 2011 for Thunderbird Road, 16,090 vehicles per day ("vpd"). The current Level of Service ("LOS") is LOS F during AM peak hours and LOS C during PM peak hours.

The American Association of State Highway and Transportation Officials ("AASHTO") Geometric Design of Highways and Streets, 2004, states that the Level of Service characterizes the operating conditions on a facility in terms of traffic performance measures related to speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. This is a measure of roadway congestion ranging from LOS A--least congested--to LOS F--most congested. LOS is one of the most common terms used to describe how "good" or how "bad" traffic is projected to be.

The posted speed limit on Thunderbird Road is 30MPH. Staff records, as well as Federal Railroad Administration ("FRA") accident/incident records, indicate on Thunderbird Road, 3 accidents, with one injury. The first occurred on 12/19/2006, were an auto ran thru the gates and was struck by the train. No injuries occurred. The second incident occurred on 2/15/2008, were an auto was fouling the tracks and was struck by a train resulting in one injury to the driver. The third incident occurred on 11/17/2014, and was the result of an auto running thru the gates and running into the train. No injuries occurred.

Alternative routes from this crossing are as follows; 111th Avenue, .95 miles to the southeast, and Greenway Road, 1.3 miles to the northwest.

Train Data

Data provided by ADOT regarding train movements through these crossings are as follows:

Train Count: 13 total average trains per day (all freight trains/no passenger trains)

Train Speed: 40 mph

Thru Freight/Switching Moves: Movements through this crossing are thru freight, as well as some switching movements.

Schools and Bus Routes

The City gave the following response about schools located near these crossings:

- *Thompson Ranch Elementary School* .5 miles north
- *El Mirage Elementary School* .9 miles west

Hospitals

The City gave the following response about hospitals in the area;

- Banner Boswell Medical Center 2.2 miles from the crossing
- Banner Boswell Wound Center 2.3 miles from the crossing
- Northwest VA Healthcare Clinic 4.0 miles from the crossing
- Kindred Hospital Arizona 4.3 miles from the crossing
- Banner Del E. Webb Memorial Hospital 4.8 miles from the crossing

Hazardous Materials

The City gave the following response when asked about vehicles transporting hazardous materials through these crossings:

It is not known how much hazardous materials traffic uses the existing crossing each day.

Zoning

Staff requested the City provide information regarding the type of zoning in adjacent areas from these crossings. The following was the City's response:

Per the City of El Mirage General Plan the project area borders the Arts District, the Neighborhoods, and the Agua Fria Gateway. The project falls into the Thunderbird Road Overlay District from Verbena Street to US 60 and is subjected there to follow form-based zoning code. The project also falls within the Transit-Oriented Development Overlay and is contained within Mixed Urban and Urban Corridor Zoning. Suburban Neighborhood zoning falls south of the project area and to the northeast. Natural reserve zoning is also found to the northeast of the project area.

Spur Lines

The City gave the following answer regarding spur lines in the area that were removed by the Railroad:

No spur removals within 10 miles of the Thunderbird Road intersection are known.

FHWA Guidelines Regarding Grade Separation

The Federal Highway Administration (“FHWA”) Railroad-Highway Grade Crossing Handbook (Revised Second Edition August 2007) provides nine criteria for determining whether highway-rail crossings should be considered for grade separation or otherwise eliminated across the railroad right of way. The Crossing Handbook indicates that grade separation or crossing elimination should be considered whenever one or more of the nine conditions are met.

The nine criteria are applied to this crossing application as follows:

		Thunderbird Road
The highway is a part of the designated Interstate Highway System	Crossing Currently meets the criteria	No
	Crossing meets the criteria by 2030	No
The highway is otherwise designed to have full controlled access	Crossing Currently meets the criteria	No
	Crossing meets the criteria by 2030	No
The posted highway speed equals or exceeds 70 mph	Crossing Currently meets the criteria	No
	Crossing meets the criteria by 2030	No
AADT exceeds 100,000 in urban areas or 50,000 in rural areas	Crossing Currently meets the criteria	No
	Crossing meets the criteria by 2030	No
Maximum authorized train speed exceeds 110 mph	Crossing Currently meets the criteria	No
	Crossing meets the criteria by 2030	No
An average of 150 or more trains per day or 300 million gross tons/year	Crossing Currently meets the criteria	No
	Crossing meets the criteria by 2030	No
Crossing exposure (trains/day x AADT) exceeds 1M in urban or 250k in rural; or passenger train crossing exposure exceeds 800k in urban or 200k in rural	Crossing Currently meets the criteria	No
	Crossing meets the criteria by 2030	No
Expected accident frequency for active devices with gates, as calculated by the US DOT Accident Prediction Formula including five-year accident history, exceeds 0.5	Crossing Currently meets the criteria	No
	Crossing meets the criteria by 2030	N/A ¹
Vehicle delay exceeds 40 vehicle hours per day	Crossing Currently meets the criteria	No
	Crossing meets the criteria by 2030	No

¹ N/A = Not Applicable

Vehicular Delays at Crossings

Based on the current single track configuration, the ADOT gave the following response about delay times for vehicles at the crossing in this application. The delay time is measured from the point that the warning devices are activated at the crossing to the time the train has cleared the crossing and the warning devices are reset.

The estimated current delay per train is 130 seconds. This is based on the following: 25seconds of preemption, 40 MPH train speed, 5280 train length, lag time of 15 seconds.

Due to a train stopped, the estimated vehicle delay is 242 seconds. This is based on the following: Break time of 30 seconds, Acceleration of 0.5 ft./s^2 , 25 seconds of preemption, 40 MPH train speed, 5280 train length, lag time of 15 seconds.

Current delays fall well below the FHWA recommended threshold of 40 delay hours per day. Future delays also do not exceed 40 hours here. It is very likely that the road authority would consider some kind of roadway project to address the traffic delays before the level of delay got to this point.

Another commonly used measure outlined in the FHWA Guidelines; the so-called Crossing Exposure Index (which is simply the product of the number of trains per day multiplied by the number of vehicles crossing daily) is 209,170 at this crossing and falls well below the exposure index of 1 million for this crossing. It should be noted that the criteria identified in the FHWA material are not mandates, but guidelines established by the Federal Highway Administration, which serve to alert those having jurisdiction that potential problems may arise.

Grade Separation

With regard to grade separating this crossing, ADOT gave the following response:

No grade-separation study was done.

Staff has utilized the FHWA Guidelines to determine the potential need for grade separation at this crossing. Based on existing conditions, the crossing in this application meets none of the nine criteria for consideration of grade separation

Crossing Closure

The area surrounding these crossings is highly developed with both commercial businesses and residential dwellings. To close this crossing would have a negative effect on many of the local businesses and limit access to residences. Therefore, Staff would not recommend closure of the crossing.

Staff Conclusions

Having reviewed all applicable data, Staff generally supports ADOT's application. Staff believes that the upgrades are in the public interest and are reasonable. Staff believes that the measures proposed by ADOT are consistent with other similar at-grade crossings in the State and will provide for the public's safety. Therefore, Staff recommends approval of ADOT's application.



Brian H. Lehman
Railroad Safety Supervisor
Safety Division

for
BHL

Originator: BHL

Original and thirteen (13) copies
of the foregoing were filed this
8th day of October, 2015 with:

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Copy of the foregoing mailed
this 8th day of October, 2015 to:

Mathew Keim
Manager of Public Projects
BNSF
740 E. Carnegie drive
San Bernardino, CA 92408-3571

Patrick Black
Fennemore Craig
2394 E. Camelback Road, Suite 600
Phoenix, AZ 85016-3429

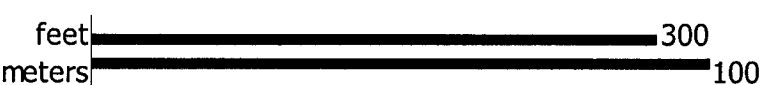
Vicki Bever, Manager
Utility and Railroad Engineering
ADOT
205 S. 17th Avenue M/D 618E
Phoenix, Az. 85007-3212

City of El Mirage
City Attorney's Office
12145 NW Grand Avenue
El Mirage, AZ 85335

Michelle Burton
Assistant Attorney General
OFFICE OF THE ATTORNEY GENERAL
1275 West Washington Street
Phoenix, AZ 85007



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